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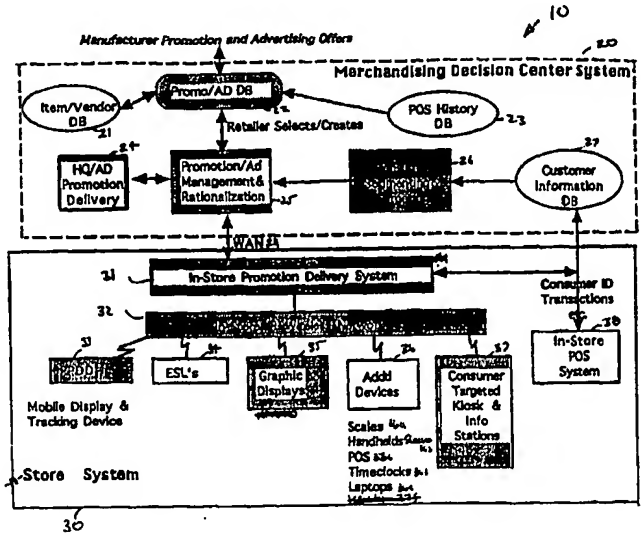

(57) Abstract

A system for use in a retail store that permits consumers to identify themselves to an in–store merchandising system prior to check–out. As a result, the consumer may be presented with promotional offers and other information specifically targeted to the particular consumer. The consumer may be identified in a number of ways such as by swiping magnetic cards and card readers attached to shopping carts. Promotional offers made to the consumer may be based on previous habits of the particular consumer, the consumer's location in the store, demographics, or purchase triggers. A consumer may also receive targeted information with respect to particular items considering purchase such as, for example, to determine the appropriateness of purchasing particular food items and prescription medication and/or over the counter drugs. Retailers and product manufacturers may therefore use information to better plan product placement, to be more responsive to customer demand, and to otherwise understand the purchasing habits of their customers.

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IN-STORE CONSUMER TARGETED MESSAGING SYSTEM

BACKGROUND

It is becoming increasing common for retail stores such as supermarkets to use electronic scanners at the cash register or point of sale terminal. There are many advantages to the use of electronic scanners. Such systems not only automate the check-out process by reading the Universal Product Code (UPC) labels on goods, but also provide information with respect to the purchasing habits of particular consumers. In these systems the customers identify themselves in the checkout line typically by swiping a magnetic stripe card.

Recent refinements to such systems provide for applying automatic discounts at the time of checkout. Data relating to the present purchases are checked against the customer's past habits and available electronic coupons and other incentives. Any discounts for which the customer might qualify are then applied to the bill.

Other electronic and computer controlled shopping systems exist. These systems provide for the distribution of price information to electronic shelf labels, electronic promotional advertising displays, and tracking the location of shopping carts. Such systems are generally described in U.S. Patent 5,572,653 issued to DeTemple et al., assigned to Rest Manufacturing, Inc., which is incorporated herein by reference in its entirety.

These systems permit an in-store computer to communicate with various devices located in the aisles of the store. A grid of infrared transceivers are installed in the ceiling of the store to provide wireless communication between a computer and with a number of

electronic devices located in the aisles. These devices can include the so-called electronic shelf label, which are individually addressable for displaying the prices of items. As a result, when the store owner wishes to change the price on an item this can be done electronically under computer control. Other such devices may include electronic scale and advertising displays. The contents of these displays are also changeable under the control of the store computer.

Still other features of this system include tracking transmitters attached to a plurality of shopping carts and baskets that are moved throughout the store. The system can thus locate particular shopping carts in the store.

Such a system provides for improvement in proper price distribution in the form of an integrated pricing and advertising system. While such systems also provide some ability to track the movement of shopping carts through a store, to determine how much time customers as a whole are spending in particular aisles or looking at particular advertising in a general sense. They do not provide an ability to present electronic promotions targeted to specific consumers.

Although such integrated pricing and advertising systems can be used in the same store with automatic discount systems, retailers are finding that the redemption rate of electronic coupons is much higher than with traditional paper coupon and paper advertising systems. In particular, because consumers are rewarded automatically by such systems, there tends to be a much greater participation rate than with traditional systems that require the clipping of paper coupons. As a result, the retailers and manufacturers of consumer products would like a way to target incentives to specific consumers such that

the amount of promotional discounts could be more effectively applied.

In addition, there is a need for consumers to better understand their own nutritional needs. The population is generally becoming more health conscious, while at the same time the numbers of those taking prescription medication or under strict doctors orders to remain on particular dietary regimens are increasing. Unfortunately, consumers are finding it increasingly difficult to understand their own and their family's nutritional health needs with respect to their weekly shopping trips to the supermarket. In addition, such consumers are faced with an increasingly bewildering array of competing claims by packaged goods manufacturers. In the worst case the result may be that consumers risk harming themselves as they ignore the potential interaction between the prescriptions they are taking and over the counter drugs.

SUMMARY OF THE INVENTION

The invention is a system which permits consumers to identify themselves to an in-store merchandising system prior to the check-out process such as during the process of shopping. The consumer may be identified in a number of ways. This identification may take place in a active form such as by stopping at a kiosk allocated to the consumer identification function or more preferably by swiping a magnetic stripe or electronic smart card in a card reader such as located in the handle of the shopping cart. Alternatively, the consumers may identify themselves by being issued an electronic hand-held device in which the card is inserted. Identification may also occur by various passive methods.

In the case of the consumer identification taking place in the form of the hand-held device, the device contains an infrared transceiver, a reader for a magnetic card or smart card, and a display. The reader detects consumer identification data from the magnetic card or the smart card and provides it to the in-store merchandising system via the infrared transceiver. The infrared transceiver also receives targeted messages from the system and causes them to be displayed on the display. The infrared transceiver may also be used to read product identification information from electronic shelf labels and provide it to the system. The display may simply contain colored lights indicating green for healthy, yellow for caution, or red for do not purchase the item, or may contain a sophisticated liquid crystal display providing high quality text and graphic messaging capabilities.

Regardless of how the consumer has been identified to the in-store merchandising system, the computer can, through tracking the location of the shopping cart or the hand-held device, also pinpoint the location of the specific consumer in the store. As a result, the consumer can receive targeted promotional and other messages as they progress through the store at the point at which a purchasing decision is made. Such messages can be sent to electronic displays located near the targeted consumer, on the hand-held device, or printed on targeted flyers at the kiosk.

The types of targeted information may include promotional offers specific to the particular consumer or may include information such as health warnings.

Because the specific consumer has been identified to the in-store merchandising system, the promotional offers can be delivered to the customer at the point of purchase based on the previous purchasing habits of the consumer,

their location in the store, previous purchase triggers, or other criteria such as demographics.

The consumer can also select specific items on the store shelves to be identified to the in-store merchandising system, such as by pointing the hand-held unit at an electronic shelf label for a particular item. In this way, the system can then further target specific information such as health related information for particular products that might effect the consumer's decision as to whether or not to purchase the product.

At the check-out system, which may be staffed or self-service, not only may promotional discounts be provided based upon the specific purchases made, but also adjusted or presented based upon the consumer's response to the targeted offers made in real time.

An in-store consumer targeting and promotional system according to the invention provides advantages to the consumer, retailer, and manufacturer.

The consumer has greater incentive to respond to targeted messages and thus receive greater discounts on purchases.

In addition, the consumer receives warnings in real-time with respect to the purchase of over-the-counter drugs or food products which may have adverse interactions with their prescriptions or other known health restrictions.

From the retailer's perspective, an in-store merchandising system can now receive demand information directly from the supply chain with respect to consumer needs, therefore permitting the retailer to set prices more accurately, to stock rarely used items efficiently, and in general acquire much better information about the shopping habits of their customers, projecting an image of caring about consumer's individual needs and desires.

Because the actual path and purchase behavior of specific customers and specific types of customers through a store are now known, the retailer can better plan the location of items in the store based upon the customers or class of customer who is most likely to see an item.

Furthermore, because it is now possible to present a known message to a profiled target customer, the retailer and manufacturer can better track the response success of particular advertising impressions. This furthermore helps to determine response elasticity based upon price and delivery metrics such as frequency of presentation of the promotion, location, day, and time of day.

From the manufacturer's perspective the system ensures proper brand identification in display advertising and allows test marketing to specific consumers in real time to determine and reward their purchasing behaviors.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and further advantages and features of the invention may be better understood by referring to the following detailed description in connection with the accompanying drawings in which:

FIG. 1 is a block diagram of an in-store consumer targeted messaging and promotion system according to the invention;

FIG. 2 is a pictorial view of a typical retail store such as a supermarket in which the invention is being used;

FIG. 3 is a diagram of the components of the system according to the invention including software processes and various databases used;

FIGS. 4a and 4b are more detailed flow diagrams of a registration process used in the system;

FIG. 5 is a more detailed flow diagram of an entry process;

FIGS. 6a and 6b are detailed flow diagrams of a shopping process;

FIG. 7 is a detailed flow diagram of a check-out process;

FIG. 8 is a pictorial view of one preferred way in which a consumer may be identified to the system using a shopping cart mounted card reader;

FIG. 9 is a pictorial view of the system pinpointing the location of the consumer;

FIG. 10 illustrates a hand-held device which may be used as an alternate mechanism for identifying the consumer;

FIG. 11 is a block diagram of the components of the sleeve device shown in FIG. 10;

FIG. 12 is a pictorial illustration of another technique using a kiosk for identifying the consumer and/or the consumer obtaining targeted information;

FIGS. 13a and 13b are examples of printed flyers which may contain targeted consumer information;

FIG. 14 is a pictorial illustration of a customer who has not identified himself and the promotional advertisement presented to him; and

FIG. 15 is a pictorial illustration of a consumer who has identified herself to the system and the promotional advertisement presented to her.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

FIG. 1 is a block diagram of a consumer targeted information delivery system 10 according to the invention. The system 10 consists of a number of components including a merchandising decision system 20 as well as an in-store

system 30. The in-store system 30 communicates with the merchandising system 20 typically via a wide area network 29.

The merchandising decision system 20, which may typically be located at the headquarters, of a retail chain, includes computer components containing various databases such as an item/vendor database 21, a promotional advertisement database 22, a point of sale history database 23, and a customer information database 27. Various promotional information sources are used to create data records representing promotions and advertising delivery systems such as a headquarters advertising promotion delivery system 24, and a consumer segmenting and targeting process 26. A promotional advertising management and rationalization system 25 presents these promotions and advertising offers to typically a network of individual retail in-store systems 30. These promotions may be manufacturer's promotions provided by the promotional advertising database 22 or may be store-specific as derived from the customer information database 27 or the point of sale history database 23, as well as other consumer segmenting and targeting information which may include demographic data and the like.

The present invention makes use of the in-store system 30 and in particular, the manner in which a consumer is identified to the system 30 prior to making purchase decisions. The in-store system 30 consists of an in-store promotion delivery system 31, an in-store infrared wireless network 32, a tracking device 33, electronic shelf labels 34, in-aisle graphic displays 35, and additional devices 36 such as may include scales 36a, hand-held sleeves 36b, point of sale terminals 36c, and in-store computer devices such as time clocks 36d, laptop computers

36e, and consumer targeted information kiosk 37, as well as connections to an in-store-point of sale system 38.

It should be understood that the components of FIG. 1 include various computer systems and/or software packages that may each run on a specific computers or which may all be available on a single computer or on various forms of distributed computing platforms that communicate via local area networks.

FIG. 2 is a pictorial representation of the inside of a retail store such as a grocery store making use of the in-store system 30. The system 30 includes an in-store computer system 40, consumer identification devices 41, infrared transceivers 42 typically arranged as a network of such devices located in the ceiling of the store, electronic advertising displays 43, electronic inventory and price setting unit 44, electronic shelf labels 45, electronic scales 46, and information kiosks 37.

In operation, the computer system 40 may communicate with any number of the electronic devices on the floor of the store via the infrared transceivers 42. For example, the consumer identification device 41 may provide information with respect to the personal identification of the particular consumer using the shopping cart associated with the consumer to the system 40 via an infrared transceiver 42 as shown by infrared signal. Likewise, the computer 40 may cause information to be displayed on the in-aisle display 43. Similarly, not only may the computer system 40 receive information from inventory control computers such as hand-held device 44 and present information such as item prices to the electronic shelf labels 45, but also the electronic shelf labels 45 may receive signals from the consumer identification device 41 and provide them to the computer system 40. In addition,

the computer system 40 may interact with customers via the kiosk 37.

Furthermore, in a manner which will be more fully understood below, the system 40 uses the infrared devices to track the path of a specific customer through the store. The retailer can thus better plan the location of items in particular aisles in the store based upon the customers or class of customer who is most likely to see them.

FIG. 3 is a block diagram of the software components of the computer system 40; these include various information databases such as a customer database 51, an offer database 52, a results database 53, and a visit database 54. The computer system 40 also contains a number of software processes including a registration process 60, an entry process 70, a shopping process 80, a check-out process 90, a reporting process 100 and an updating process 110.

The customer database 51 contains data pertaining to customers known to the store and which of the promotional outstanding offers apply to particular customers. The consumer database 51 also contains information about specific individuals such as their past buying habits, product likes and dislikes, prescription medications, demographics and other data.

The offers database 52 contains information as to the actual details of specific promotional offers and preferred manner of advertising and displaying these promotions.

The visits database 54 maintains records in real-time of active visits. Visit records are typically initiated by consumers that willingly identify themselves to the system 40 in a manner to be described. The visit database 54 is updated during the shopping process and closed after check-out.

The results database 53 contains records created after

the computer system 40 may interact with customers via the kiosk 37.

Furthermore, in a manner which will be more fully understood below, the system 40 uses the infrared devices to track the path of a specific customer through the store. The retailer can thus better plan the location of items in particular aisles in the store based upon the customers or class of customer who is most likely to see them.

FIG. 3 is a block diagram of the software components of the computer system 40; these include various information databases such as a customer database 51, an offer database 52, a results database 53, and a visit database 54. The computer system 40 also contains a number of software processes including a registration process 60, an entry process 70, a shopping process 80, a check-out process 90, a reporting process 100 and an updating process 110.

The customer database 51 contains data pertaining to customers known to the store and which of the promotional outstanding offers apply to particular customers. The consumer database 51 also contains information about specific individuals such as their past buying habits, product likes and dislikes, prescription medications, demographics and other data.

The offers database 52 contains information as to the actual details of specific promotional offers and preferred manner of advertising and displaying these promotions.

The visits database 54 maintains records in real-time of active visits. Visit records are typically initiated by consumers that willingly identify themselves to the system 40 in a manner to be described. The visit database 54 is updated during the shopping process and closed after check-out.

The results database 53 contains records created after

check-out as to what occurred during the customers visit such as information pertaining to particular consumers, the offers presented to them, and their responses thereto.

One purpose of the computer system 40 and the various processes and databases illustrated in FIG. 3 is to provide customer with specific targeted information such as targeted promotional offers and/or other consumer specific information such as health warnings based upon the consumer voluntarily identifying themselves at a point in the shopping process prior to check-out. By so identifying themselves, the consumer may thus be presented with targeted offers specific to them, as well as other pertinent information while they are making a purchase decision. Various processes executed by the in-store computer 40 accomplish this, including the registration process 60, entry process 70, shopping process 80, check-out process 90, and report process 100.

During the registration process 60, the retailer has typically sent a frequent shopper identification card or other cards containing magnetic strips or imbedded computer chips (so called smart cards) to various existing shoppers consumers who are likely to shop at the store via the mail or other delivery mechanisms. In general, the registration process 60 is performed to enter consumer information into the system 40 thereby identifying a particular person with an individual identification means such as the identification card. The card not only provides a means of identification in the future but also establishes an association between a customer's database records and demographics for the customer. The registration process 60 with the system is typically voluntary, the understanding that the proprietor of the store will offer better discounts should the consumer decide to subscribe to the

system. Specific promotions may be made just for registration with the system for example.

A reporting process 100 periodically provides results of the in-store system including identification of consumers, particular offers presented and accepted, and other tracking data to a controlling system which may be the in-store system 30 or which may be external thereto such as the merchandising center system 20.

An update process 110 updates the in-store customer database 51 and offer database 52 from a system external to the in-store system 30 that is controlling the offer of promotions. This may be a headquarters system such as the merchandising system 20 shown in FIG. 1 or may be a system connection provided directly by a retailer or by a manufacturer.

As shown in FIGS. 4a and 4b more particularly (and continuing to refer to FIGS. 1 and 2 for clarity), the registration process 60 is carried out by the in-store system 30 such as when a consumer approaches the kiosk 37 and touches a screen as shown in step 60-1. The next step in the process is for the computer system 40 to determine from the customer database 51 whether or not the customer is an existing customer such as in step 60-2. If so, the process may then proceed to a step 60-3 where the customer may be prompted to insert the identification card to obtain rewards. Other menus are displayed (not shown in FIG. 4a) if a card is lost or stolen or misplaced and replacement is needed.

If the customer is not an existing customer, a new customer form is displayed in step 60-4 and in step 60-5 the customer enters appropriate personal data. In a next step 60-6 the customer is asked whether they wish to obtain a new identification card. If a new card is desired in

step 60-7, then the process proceeds to a step 60-8 where a card is dispensed and a record is set up for the consumer in the customer database 51. However, if the customer does not wish to receive a new card the customer may be prompted in step 60-9 to insert a payment card in the card reader and the following step 60-10 causes the information from the payment card to be read and stored for the consumer record, where the data is stored in step 60-10 in the customer database 51.

The final step 60-11 can be used to provide new customer rewards information in the form of promotional electronic advertisements, targeted printed flyers, and the like, as will be described in greater detail below.

The promotional offer entry process 70 is shown is FIG. 5. The first step 70-1 includes analysis of the probability of consumers accepting an offer based upon demographics, age, children, health, date, time of day, expected path through the store etc., and their actual individual purchase history, and then creating data records that represent specific promotions and links to corresponding advertisements tailored to the individual consumer. This information is obtained by comparing records in the customer database 51 and the offer database 52 as well as other information which may be available from the merchandising decision center system 20.

Although the entry process 70 may take place in the in-store computer 40, it is also possible for the entry process to take place in a chain-wide or other centralized location in step 70-2, specific customer offers are sent to the in-store often database 52 as needed.

FIGS. 6a and 6b illustrate the shopping process 80 executed by the in-store system 40 while the consumer is in the store. The process performs routine voluntary

identification of the consumer such as upon entry into the store; this may typically include specific identification of the consumer to the in-store system 30 but may also include an anonymous identification which such that the system knows that someone is in the store, but doesn't know anything about them specifically.

In a first step 80-1 the consumer inserts their identification card in a reader located on a shopping cart, basket, or into a hand-held portable unit, or into other devices such as information kiosk 37. In the next step 80-2, if the card is not readable then the process proceeds to a step 80-3 where an error indication is made. If, however, the card can be read then the process proceeds to step 80-4 where the customer identification is transmitted to the system such as via the infrared transceivers 42 located in the ceiling. As the customer proceeds through the store, the position of the customer's specific cart or basket is also continuously transmitted as in step 80-5. Data with respect to details of the visit is stored on the visits database 54 such as in a step 80-6.

The identification of a customer may also take place by passive methods, such as by radio-frequency identification through personal communications system devices or through such systems that are presently under developments such as personal identification transmission through touch such as have been announced recently by International Business Machines Corporation. See the Wall Street Journal, December ___, 1996, pp. _____.

Thereafter, in step 80-7, the shopper proceeds in the store with their identification and location known to the in-store system 40.

In the next step 80-8 the shopper approaches a particular product area. As the consumer proceeds to the product area in step 80-9, and as shown in FIG. 2

pictorially, an electronic display 43 may change from a normal advertisement which is provided in a default mode to a targeted promotional offer for this particular customer. The displays 43 are typically bit mapped high quality liquid crystal displays with the displays 43 being individually addressable by the wireless transceivers 42 located in the ceiling.

The targeted promotional advertisement is selected based upon information from various sources such as demographics, purchase history, an expected level of spending, the probability of loyalty to the specific retailer, and other factors. Since the path of the particular customer through the store is known, the selection of advertisements can thus be made based also upon triggers associated with prior products considered while on this trip. As part of this process, in step 80-9, a record may be updated in a visits database 54 to indicate that this particular consumer was shown a particular promotion.

Turning attention now to FIG. 6b the shopping process is further described in detail. As a next step 80-10 it may be determined whether or not other shoppers which have been identified to the system are in the same vicinity as the customer identified in 80-8. If this is not the case then the display 43 may revert to the normal default advertising in step 80-11. If however, there is another shopper near the product area in step 80-12 then a different targeted offer may be displayed to the second customer.

Specific targeted messages may also be made for classes of consumers based upon retailer established criteria. For example, the retailer may assign customers to various loyalty classes such as platinum, gold, silver, or bronze type incentive awards programs. By displaying

targeted promotions based upon class, privacy concerns of the consumer about specific products may be alleviated. In any event the shopper then continues through the store to another location in step 80-13.

A similar concern with privacy of information such as with respect to health warnings specific to the consumer may also be addressed as in step 80-14. This step may be executed for shoppers having identified themselves to the system with portable hand-held units depicted in FIGS. 10 and 11. In such an instance the shopper may point the portable device at an electronic shelf label 45 on the aisle and press an input device such as a button on the unit.

The electronic shelf labels 45, also being connected to the in-store computer system 40 via the infrared transceivers 42, may also be controlled in response to the proximity of a specific consumer. This may be done by detecting the location of the shopper's cart or by the customer pointing the hand-held unit at the electronic shelf label 45. The electronic labels 45 may than also be used to display targeted information. For example, the in-store computer system 40 may send information to the electronic shelf label 45 to display a special price for a particular consumer in step 80-16.

The price data displayed on the electronic shelf labels may now therefore depend upon a number of factors specific to the individual customer, including their prior individual as well as demographic purchasing habits, perceived brand loyalty, and any of a number of factors that are now known because a specific customer has been identified at the point where they decide to make a purchase.

In addition, if the hand-held unit is of the type having a display, consumer targeted information specific to

this individual may be displayed on the hand-held unit. The process of using the hand-held unit will be described in further detail in connection with FIGS. 10 and 11.

In any event, in step 80-17 the system records the electronic shelf label identification together with consumer identification in the visits database 54 thereby keeping a record of the price that was offered to the particular consumer. Finally, in stop 80-18 the shopper continues a process until reaching a check-out station and point of sale terminal.

The check-out process 90 is shown in detail in FIG. 7. In a first step 90-1 the shopper approaches a checkout line with the identification card still in the reader. This permits a step 90-2 in which the clerk may greet the shopper by name; this is because the point of sale system 36c is also connected to the in-store system 30 and therefore information such as the shopper name can be displayed on the clerk's register.

The greeting may also be more involved, including questions that the retailer would like the clerk to ask the customer during checkout. These questions may depend upon, for example, the known personality of the customer or the loyalty of that customer to the store. For example, an individual shopper categorized as, for example, being a "loyal" customer, may be asked questions such as "Did we have everything that you were looking for today?", to "What more the store could be doing to improve the shopping experience?"

In step 90-3 the shopper has been identified to the checkout process. It is preferred that this identification be made at the start of the checkout process to provide further capability of displaying credits, discounts, or other rewards next to or underneath each item on the point of sale unit display. Credits, discounts, and other

rewards will be specific to the individual customer and their response to promotions displayed as previously maintained in the visits database 54. In a step 90-4 a receipt is printed providing the total rewards and amount to and followed by a final step 90-5 where the cart or basket is returned to a start location.

It should be understood that the check-out line may be staffed or of the self-service type.

FIG. 8 shows in more detail the manner in which according to the invention, the customer may identify themselves to the in-store merchandising system 30. In particular, as shown in the picture a customer may insert her identification card in a card reader 130 mounted to a shopping cart 132. The shopping cart 132 thus receives customer identification information from the card 131 and provides it to the computer 40 via the infrared transceiver 42 as shown in FIG. 9. The various specifics of the manner in which information may be transmitted through the shopping cart 132 to the infrared transceiver 42 is described in further detail in the aforementioned U.S. patent 5,572,653 issued to DeTemple et al. and assigned to Rest Manufacturing, Inc., which is hereby incorporated by reference in its entirety.

Alternatively, the consumer may make use of a hand-held device 150, as shown in FIG. 10. The hand-held unit 150 accepts the credit card 130 in a slot 152. Various buttons 154 on the surface of the unit 130 may provide a mechanism for the consumer to interact with the computer system 40. The device 150 also includes an infrared transceiver 151 that permits the device 150 to communicate with the in-store computer system 40 via the infrared transceiver 42.

The hand-held unit 150 may also typically include a display 155. The display 155 may be as simple as a set of

colored Liquid Crystal Displays (LCDs) such as a red LCD 156a, a yellow LCD 156b, and a green LCD 156c. The LCDs may be individually activated by the computer system 40 sending messages via the transceivers 42 to the unit 150. The LCDs may be lit in response to the consumer having identified a specific item via the electronic shelf label 145 as previously described. The red LCD 156a may indicate that the item is unhealthy, the yellow LCD 156b may indicate caution, and the green LCD 156c may indicate the item is acceptable for the consumer to use.

Alternatively, the display 155 may include a high resolution display that is capable of showing text and/or graphical information to the consumer.

FIG. 11 is a block diagram of the electronic components of the hand-held unit 150 including the display 155, infrared transceiver 151, and card reader 158 as well as a microprocessor 160, memory 161, and power source such as a battery 162. Then microprocessor 160 performs the various tasks assigned to the unit 150 such as receiving information from the card reader 158 and infrared transceiver 151 as well as providing information to the infrared transceiver 151 and display 155.

FIG. 12 is a pictorial view of the consumer interacting with the kiosk 37 at the front of the store as previously mentioned in connection with FIGS. 1 and 2. In particular, the kiosk 37 may contain a card reader 170 and display 172 that are connected such as via a local area network to the in-store computer 40. The kiosk 37 permits the consumer to receive targeted promotional information upon entering the store via the display 172 or also via the printing (not shown in FIG. 12) of high quality printed advertisement.

Examples of such targeted advertisements are shown in FIGS. 13a and 13b. These targeted advertisements are

composed based upon demographics and as well as the specific purchase habits of the particular consumer. They would be different for each consumer such as shown in the figures. For example, FIG. 13a is for a Ms. Smith who enjoys gourmet items such as a Harvarti Cheese, Land-O-Lakes Butter, and HaagenDaz Ice Cream. A flyer for a Mrs. Jones in FIG. 13b would contain promotions for different items such as unsalted butter, diet cola and Yoplait Light yogurt.

FIGS. 14 and 15 are more detailed views of the in-store display devices 43 which presenting targeted promotional advertising information. For example, in FIG. 14, the gentleman shown is a customer who has not identified himself to the system 30. He will see generic promotional ad on the display 43.

However, as shown is FIG. 15, a customer such as the lady who has previously identified herself to the system as in FIGS. 8 and 9, will see a targeted offer specific to her on the display 43. Should she desire to further decide whether a selected item 49 is consistent her dietary restrictions she then simply points the item 49 or her hand-held device 150 at the electronic shelf label 45 associated with the particular product 49.

While this invention has now been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

An in-store consumer targeting and promotional system according to the invention provides advantages to the consumer, retailer, and manufacturer.

For example, the consumer has greater incentive to respond to targeted messages and thus receive greater

discounts on purchases. In addition, the consumer receives warnings in real-time with respect to the purchase of over-the-counter drugs or food products which may have adverse interactions with their prescriptions or other known health restrictions.

The consumer is also less likely to feel threatened by such a system, since it requires active behavior on the part of the customer. In other words, the customer interacts with the system when and how they desire.

From the retailer's perspective, an in-store merchandising system can now receive demand information directly from the supply chain with respect to consumer needs, therefore permitting the retailer to set prices more accurately, to stock rarely used items efficiently, and in general acquire much better information about the shopping habits of their customers, projecting an image of caring about consumer's individual needs and desires, without being unnecessarily intrusive.

In addition, because the actual path of specific customers and specific types of customers through a store are now known, the retailer can better plan the location of items in the store based upon the customers or class of customer who is most likely to see an item.

Furthermore, because it is now possible to present a known message to a profiled target, the retailer and manufacturer can better track the response success of particular customers to particular advertising impressions. This furthermore helps to determine response elasticity based upon price and delivery metrics such as frequency of presentation of the promotion, location, day, and time of day.

From the manufacturer's perspective, the system ensures proper brand identification in display advertising

and allows test marketing to specific consumers in real time to determine and reward their purchasing behaviors.

The invention may also be used in other fields or forms beyond the above described preferred embodiment for a retail supermarket. For example, the invention may be used in a health care setting where the consumers are patients in a hospital and food, drug and other items are tracked. Drug, food, and disease interaction warnings can then be displayed to the patient or a nurse, intern, physician or other care-giver prior to permitting their intake.

CLAIMS

What is claimed is:

1. A method for providing information to permit selection of products by a consumer comprising the steps of:

(a) prompting consumers to identify themselves personally prior to making product selections; and

(b) delivering targeted messages to an identified consumer based upon stored data specific to a particular identified consumer before that customer makes a product selection.

2. A method as in Claim 1 wherein step (a) additionally comprises the step of:

reading personal identification information from a pre-recorded electromagnetic card containing data specific to the particular consumer.

3. A method as in Claim 2 wherein the step of reading a pre-recorded electromagnetic card is performed by a self-service device.

4. A method as in Claim 1 wherein the step of reading a pre-recorded electromagnetic card is performed by a card reader disposed in a handle of a shopping cart.

5. A method as in Claim 1 wherein step (a) additionally comprises the step of:

prompting the consumer to enter personal identification information into a kiosk.

6. A method as in Claim 1 wherein step (a) additionally comprises the step of:

reading personal identification information from an electromagnetic device containing data specific to the particular consumer.

7. A method as in Claim 1 wherein step (a) additionally comprises the step of:

detecting physically unique characteristics of the consumer.

8. A method as in Claim 1 wherein step (a) additionally comprising the step of:

providing a kiosk at which the consumer identifies themselves.

9. A method as in Claim 1 wherein step (b) additionally comprises the step of:

printing a promotional flyer based upon stored data specific to the identified consumer.

10. A method as in Claim 1 wherein step (b) additionally comprises the step of:

displaying an electronic shelf advertisement based upon stored data specific to the identified consumer.

11. A method as in Claim 10 wherein step (b) additionally comprises the step of:

tracking the location of the identified consumer while the consumer shops.

12. A method as in Claim 11 wherein step (b) additionally comprises the step of:

modifying an electronic shelf advertisement near a location of an identified consumer based upon stored data specific to the identified consumer.

13. A method as in Claim 11 wherein step (b) additionally comprises the step of:

changing a price on an electronic shelf advertisement near a location of an identified consumer based upon stored data specific to the identified consumer.

14. A method as in Claim 11 wherein step (b) additionally comprises the step of:

changing a price on an electronic hand held unit based upon stored information specific to the identified consumer.

15. A method as in Claim 1 wherein step (b) additionally comprises the step of:

delivering targeted messages for product promotions based upon stored information specific to the identified consumer prior to a point of purchase.

16. A method as in Claim 14 wherein the promotions are store originated.

17. A method as in Claim 14 wherein the promotions are chain originated.

18. A method as in Claim 14 wherein the promotions depend upon customer demographics.

19. A method as in Claim 14 wherein the stored information includes demographics selected from the group consisting of age, income, and size of household.

20. A method as in Claim 14 wherein the stored information includes the consumer's prior purchase history.

21. A method as in Claim 14 wherein the stored information includes the consumer's path traveled in the store.

22. A method as in Claim 14 wherein the stored information includes the identified consumer's response to past promotions.

23. A method as in Claim 14 wherein the step of delivering targeted messages additionally comprises the step of:

replacing a generic promotion by a specific promotion for the identified consumer.

24. A method as in Claim 1 wherein step (b) additionally comprises the step of:

delivering targeted messages based upon stored data relating to the identified consumer's nutritional preferences.

25. A method as in Claim 1 wherein step (b) additionally comprises the step of:

delivering targeted messages based upon stored data relating to the identified consumer's health concerns.

26. A method as in Claim 1 wherein step (b) additionally comprises the step of:

delivering targeted messages to permit a store clerk to greet an identified consumer by name.

27. A method as in Claim 1 wherein step (b) additionally comprises the step of:

delivering targeted messages to permit a store clerk to ask questions of the consumer depending upon stored data specific to the consumer.

28. A method for operating a system for processing information relating to product promotions in a retail store comprising the steps of:

(a) identifying a customer personally prior to checkout;

(b) tracking the identified customer's location in the store as the customer proceeds to shop through the store.

(c) as the customer approaches a product area, displaying a promotion specific to the identified customer.

29. A method as in Claim 28 additionally comprising the step of:

displaying a generic advertisement if other customers are near the product area.

30. A method as in Claim 28 wherein the promotion is price information displayed on a shelf label.

31. A method as in Claim 28 additionally comprising the steps of:

indicating a selected product to the system; and

displaying a promotional price specific to the selected product based upon information specific to the identified customer.

32. A method as in Claim 28 additionally comprising the step of:

planning the location of products in the store based upon the actual path of specific customers through the store who were known to purchase the item.

33. A method as in Claim 28 additionally comprising the step of:

tracking the response success of particular promotional advertising impressions to specific customers.

34. A method as in Claim 28 additionally comprising the step of:

determining a price based upon response elasticity metrics selected from the group consisting of frequency of presentation of the promotion, location of presentation of the promotion, date, and time of day.

35. A method for delivering targeted product promotions comprising the steps of:

(a) developing product promotion data in a merchandise decision system;

(b) developing customer information data for whom promotion is to be targeted;

(c) providing product promotion and targeted customer data to an in store promotion delivery system;

(d) determining an identity of a particular customer in a store prior to checkout;

(e) as the particular customer is shopping in the store, displaying promotional advertising targeted to the customer based upon the product promotion data and the customer information data specific to the identified customer; and

(f) applying promotion to customer purchases during checkout.

36. A method as in Claim 35 wherein the merchandise decision center system is for a retail store chain.

37. A method as in Claim 35 wherein the customer information data is for a retail store chain.

38. A hand-held portable data processing unit for processing and presenting consumer information, comprising:

(a) an electromagetic card reader for reading consumer data from an electromagnetic card;

(b) a transceiver for receiving information from and transmitting information to a centralized data processing system over a wireless communication link;

(c) at least one activatable input device for permitting a consumer to provide user input data indicating a product selection; and

(d) a display for presenting product information to the consumer in response to the consumer data read from the electromagnetic card, the information received from the centralized data processing system, and the user input data indicating a product selection.

39. A hand-held unit as in Claim 38 wherein the display additionally comprises at least one colored indicator, with the color of an activated indicator denoting an unhealthy product selection, a cautionary product selection, or acceptable product selection.

40. A hand-held unit as in Claim 38 wherein the display is capable of presenting text and graphic information to the consumer relating to the product selection.

41. A hand-held unit as in Claim 38 wherein at least one of the activatable input devices indicates that the consumer intends to accept a promotional offer for the selected product.

42. A hand-held unit as in Claim 38 wherein at least one of the activatable input devices indicates that the consumer wishes to provide demographic information to system.

43. A hand-held unit as in Claim 38 wherein the centralized data processing system is located in a retail store.

44. A hand-held unit as in Claim 38 wherein the centralized data processing system is located in a health care setting.

45. A hand-held unit as in Claim 38 wherein the wireless link is an infrared link.

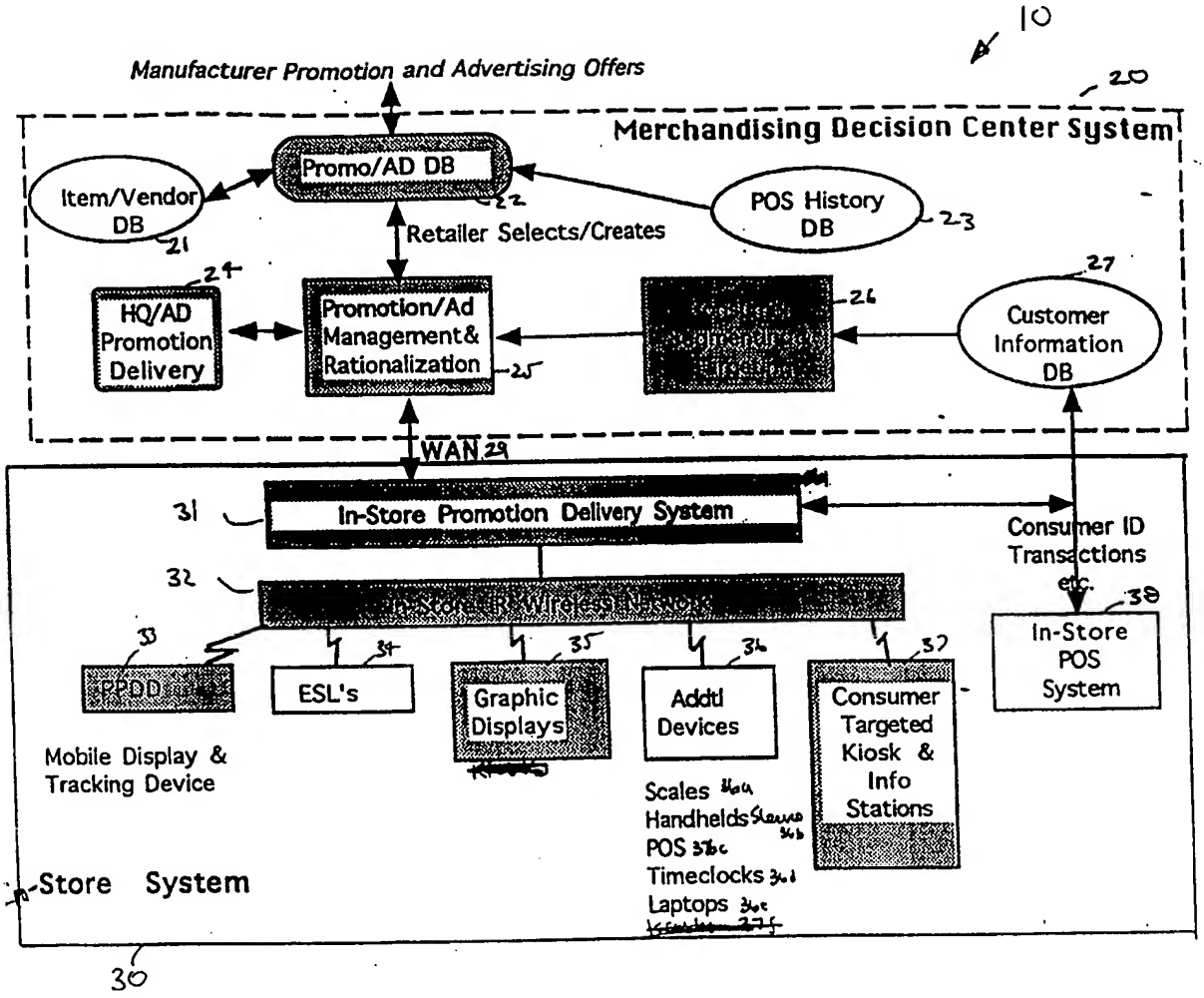

10
Manufacturer Promotion and Advertising Offers
20
Merchandising Decision Center System
Promo/AD DB
22
Item/Vendor DB
21
POS History DB
23
Retailer Selects/Creates
24
HQ/AD Promotion Delivery
Promotion/Ad Management& Rationalization
25
26
27
Customer Information DB
WAN 29
31
In-Store Promotion Delivery System
32
In-Store RF Wireless Network
Consumer ID Transactions etc.
38
In-Store POS System
33
PPDD
ESL's
34
Graphic Displays
35
Addtl Devices
36
Consumer Targeted Kiosk & Info Stations
37
Mobile Display & Tracking Device
Scales
Handhelds
POS
Timeclocks
Laptops
Store System
30

FIG-1

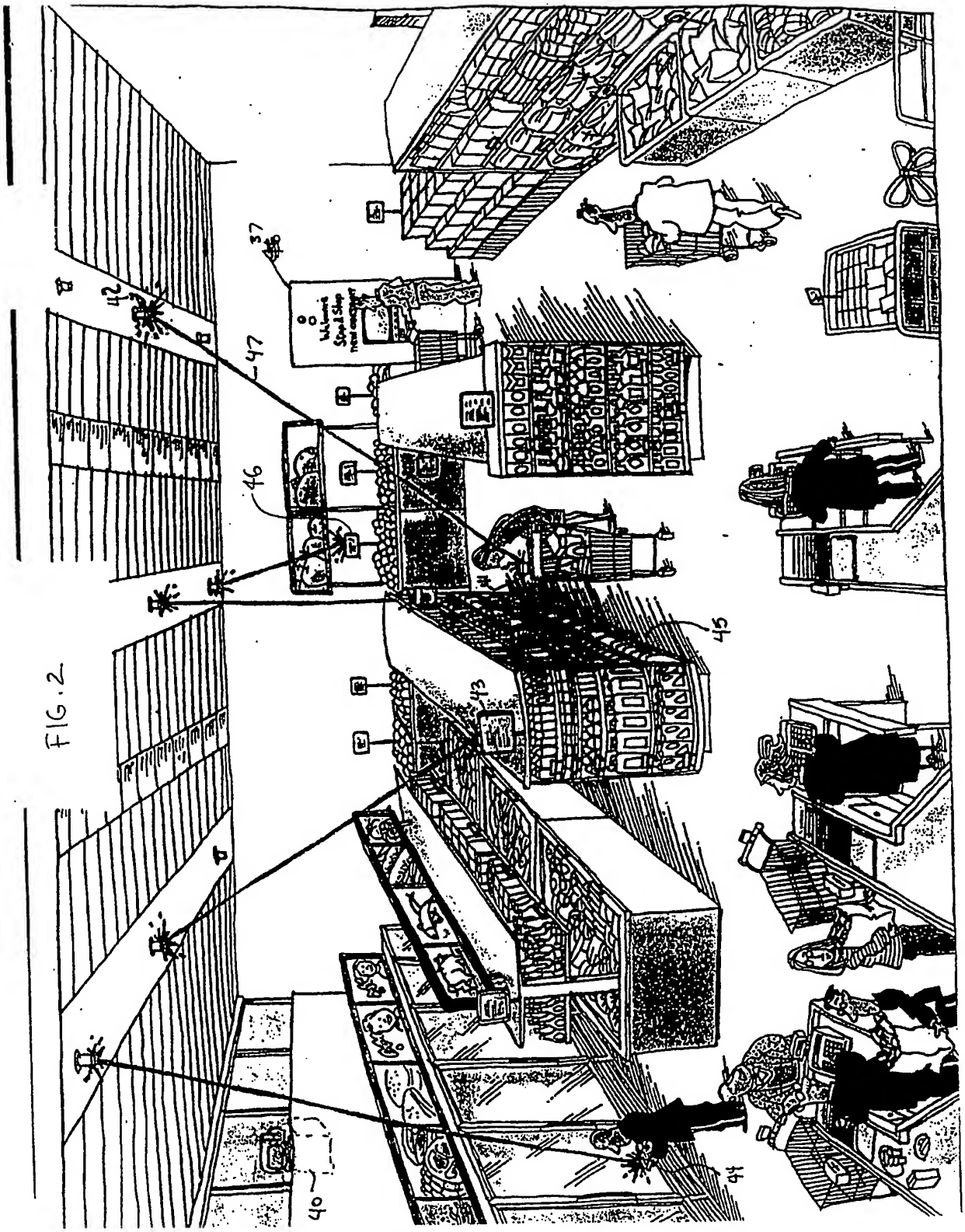


FIG. 2

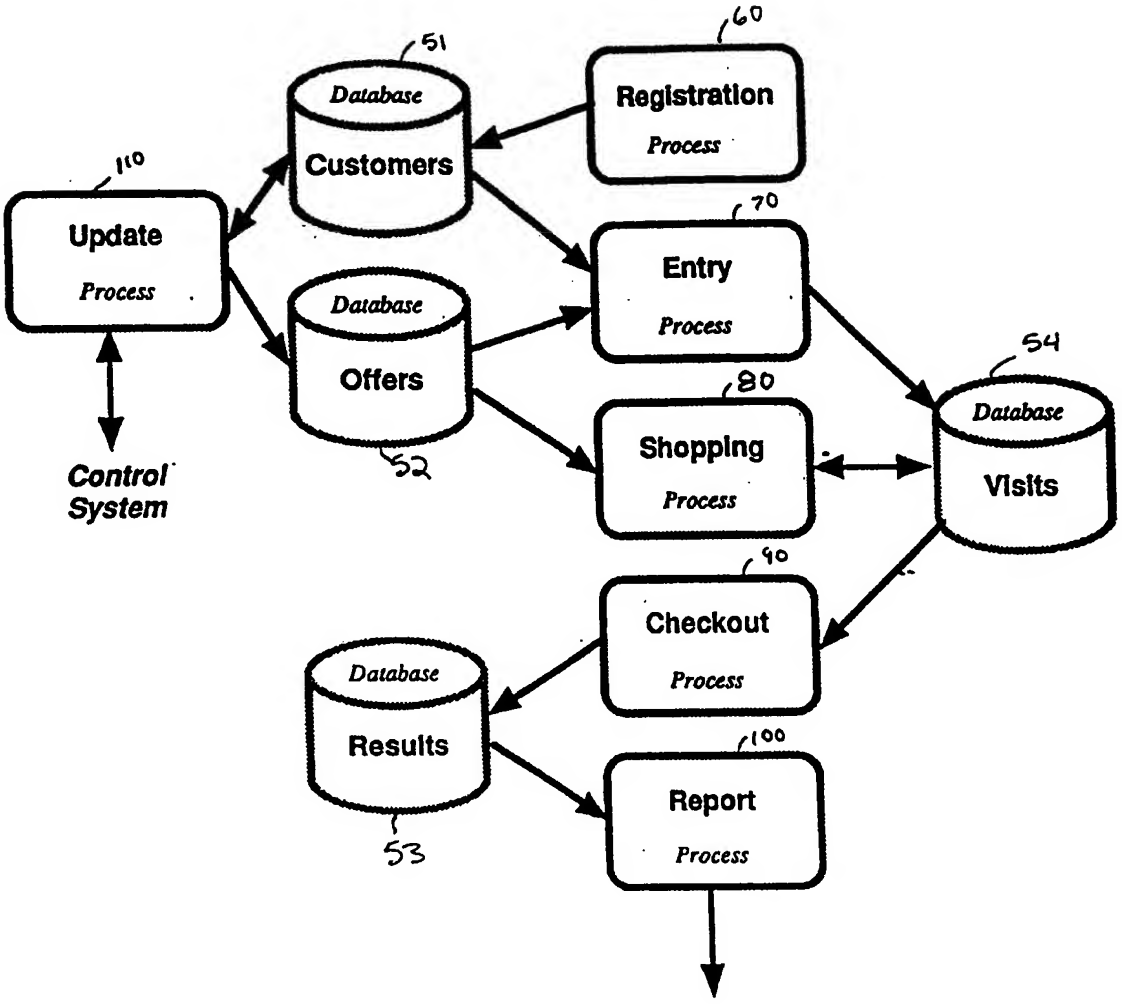
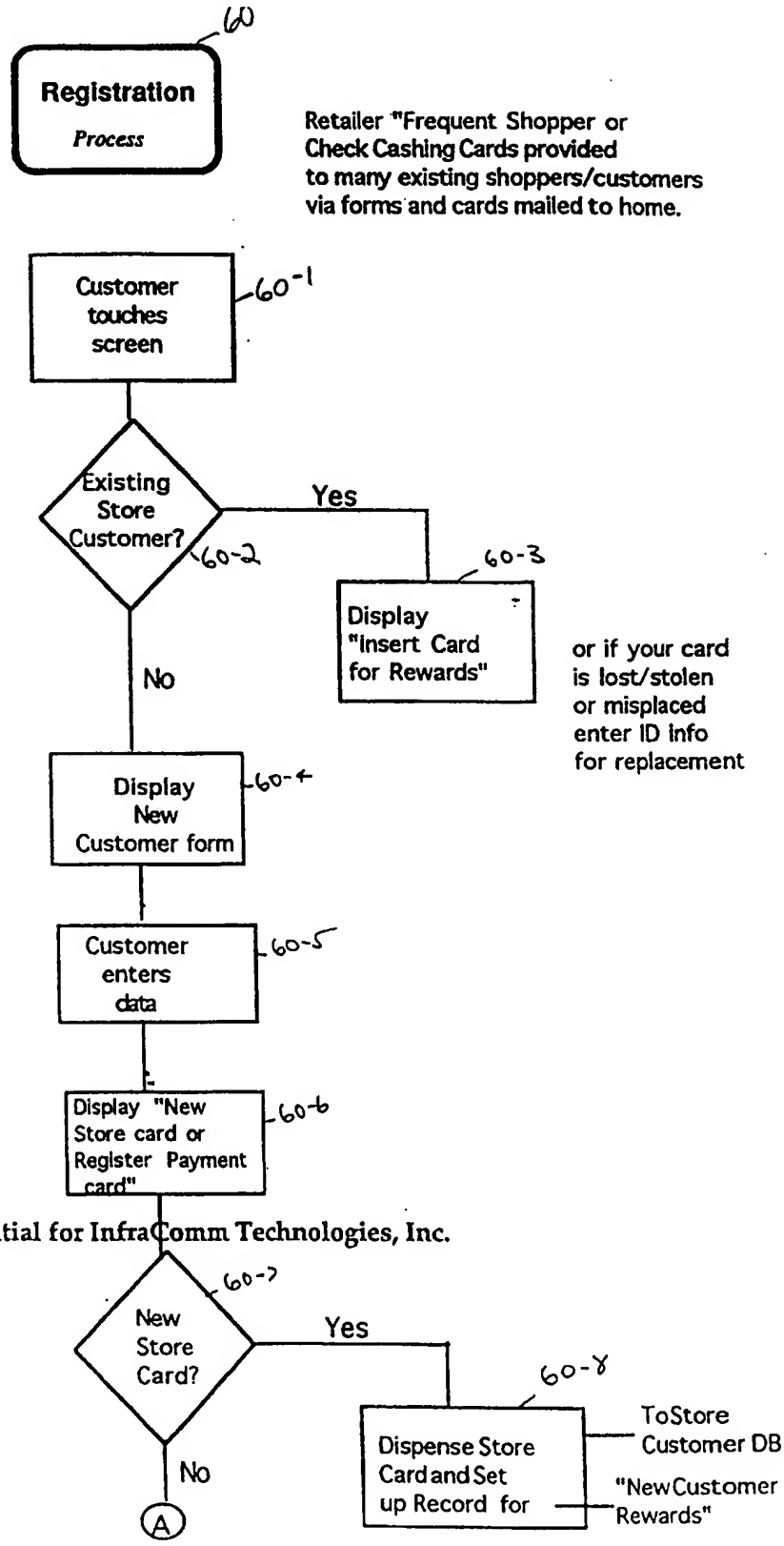

60
51
Database
Customers
Registration
Process
110
Update
Process
70
Entry
Process
Database
Offers
54
Database
Visits
80
Shopping
Process
Control
System
52
90
Checkout
Process
Database
Results
100
Report
Process
53

FIG. 3



Proprietary and Confidential for InfraComm Technologies, Inc.

FIG. 9A

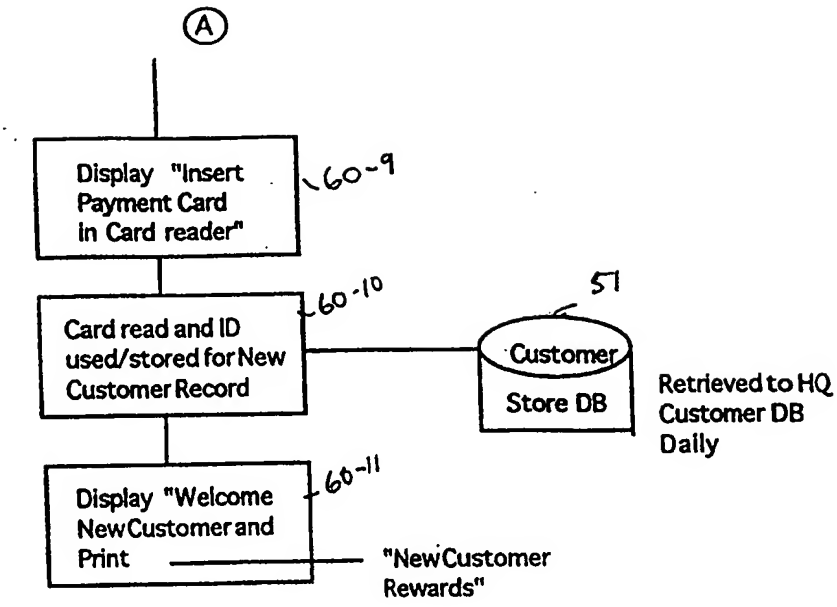

A
Display "Insert Payment Card in Card reader"
60-9
Card read and ID used/stored for New Customer Record
60-10
51
Customer
Store DB
Retrieved to HQ Customer DB Daily
Display "Welcome New Customer and Print
60-11
"New Customer Rewards"

FIG. 4B

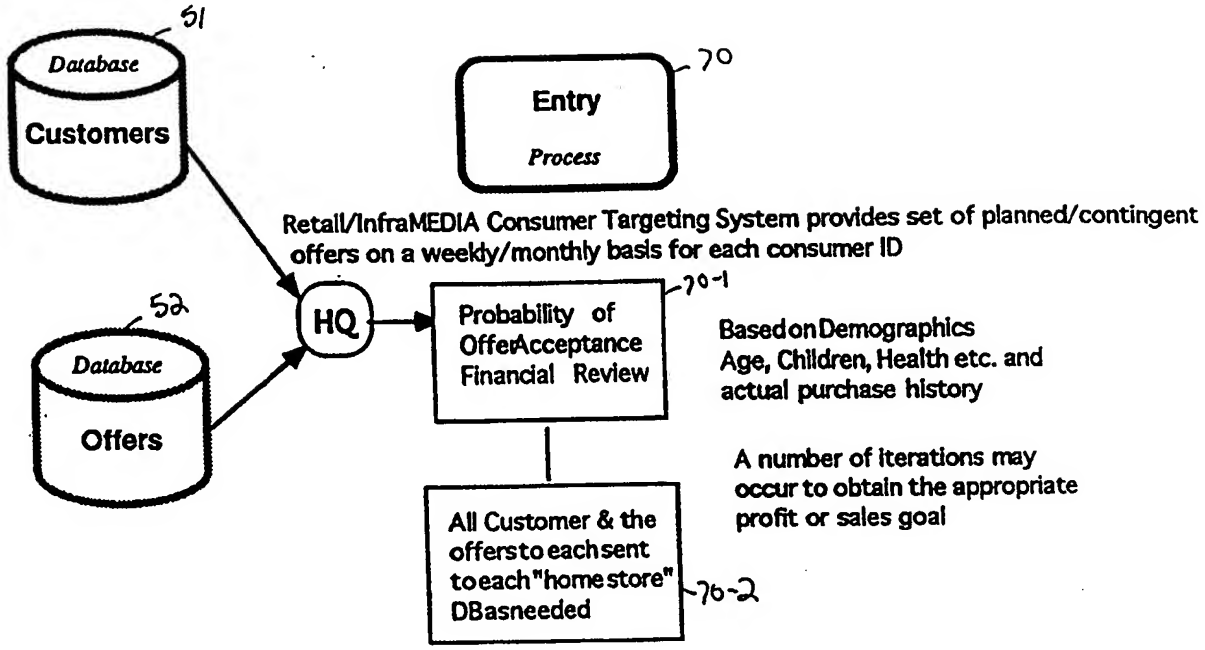

51
Database
Customers
70
Entry
Process
Retail/InfraMEDIA Consumer Targeting System provides set of planned/contingent offers on a weekly/monthly basis for each consumer ID
52
Database
Offers
HQ
70-1
Probability of OfferAcceptance Financial Review
Based on Demographics Age, Children, Health etc. and actual purchase history
A number of iterations may occur to obtain the appropriate profit or sales goal
All Customer & the offers to each sent to each "home store" DB as needed
70-2

FIG. 5

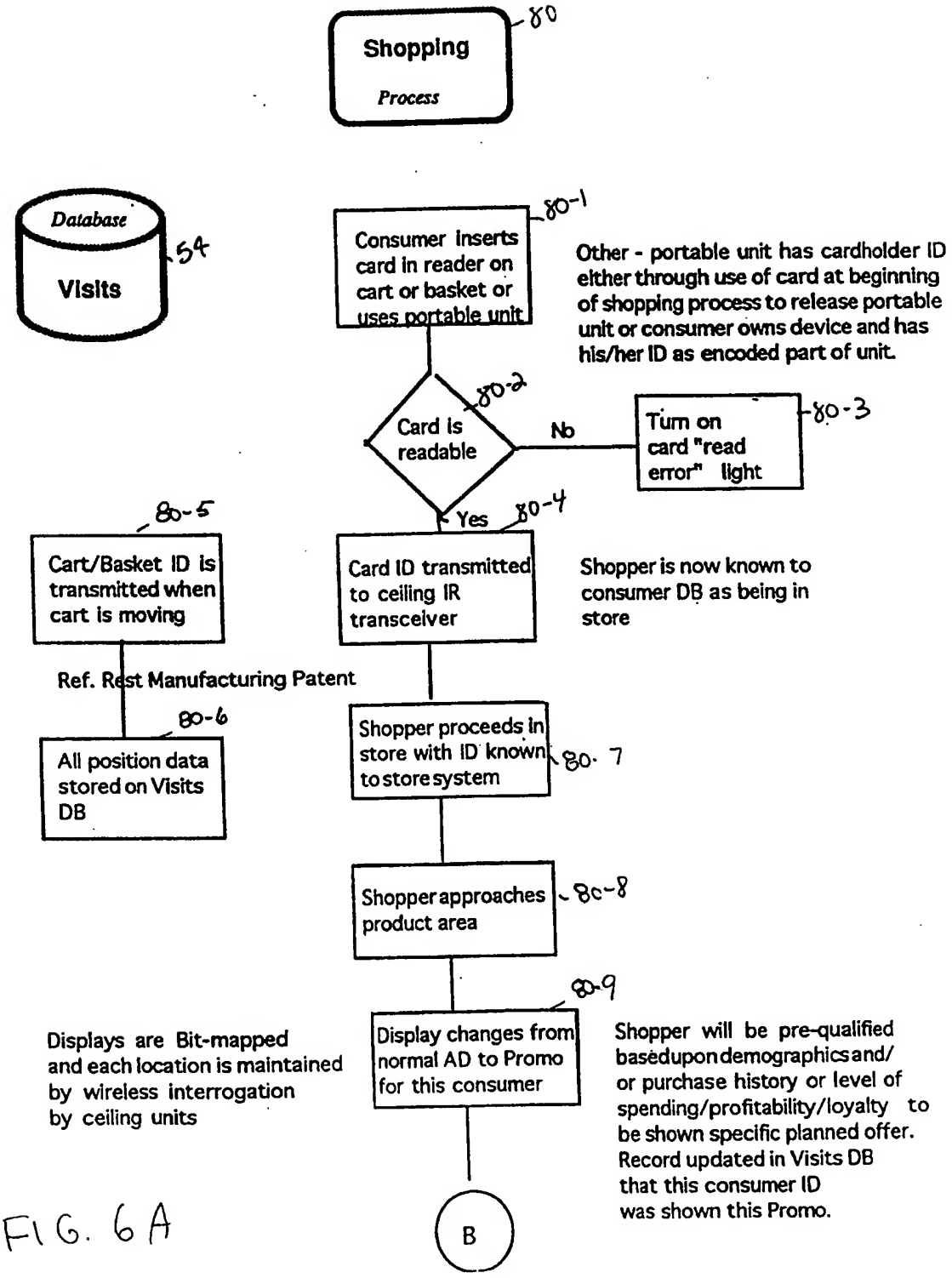

Shopping
Process
80
Database
Visits
54
Consumer inserts card in reader on cart or basket or uses portable unit
80-1
Other - portable unit has cardholder ID either through use of card at beginning of shopping process to release portable unit or consumer owns device and has his/her ID as encoded part of unit.
Card is readable
80-2
No
Turn on card "read error" light
80-3
Yes
80-4
Cart/Basket ID is transmitted when cart is moving
80-5
Card ID transmitted to ceiling IR transceiver
Shopper is now known to consumer DB as being in store
Ref. Rest Manufacturing Patent
All position data stored on Visits DB
80-6
Shopper proceeds in store with ID known to store system
80-7
Shopper approaches product area
80-8
Display changes from normal AD to Promo for this consumer
80-9
Displays are Bit-mapped and each location is maintained by wireless interrogation by ceiling units
Shopper will be pre-qualified based upon demographics and/ or purchase history or level of spending/profitability/loyalty to be shown specific planned offer. Record updated in Visits DB that this consumer ID was shown this Promo.
B

FIG. 6A

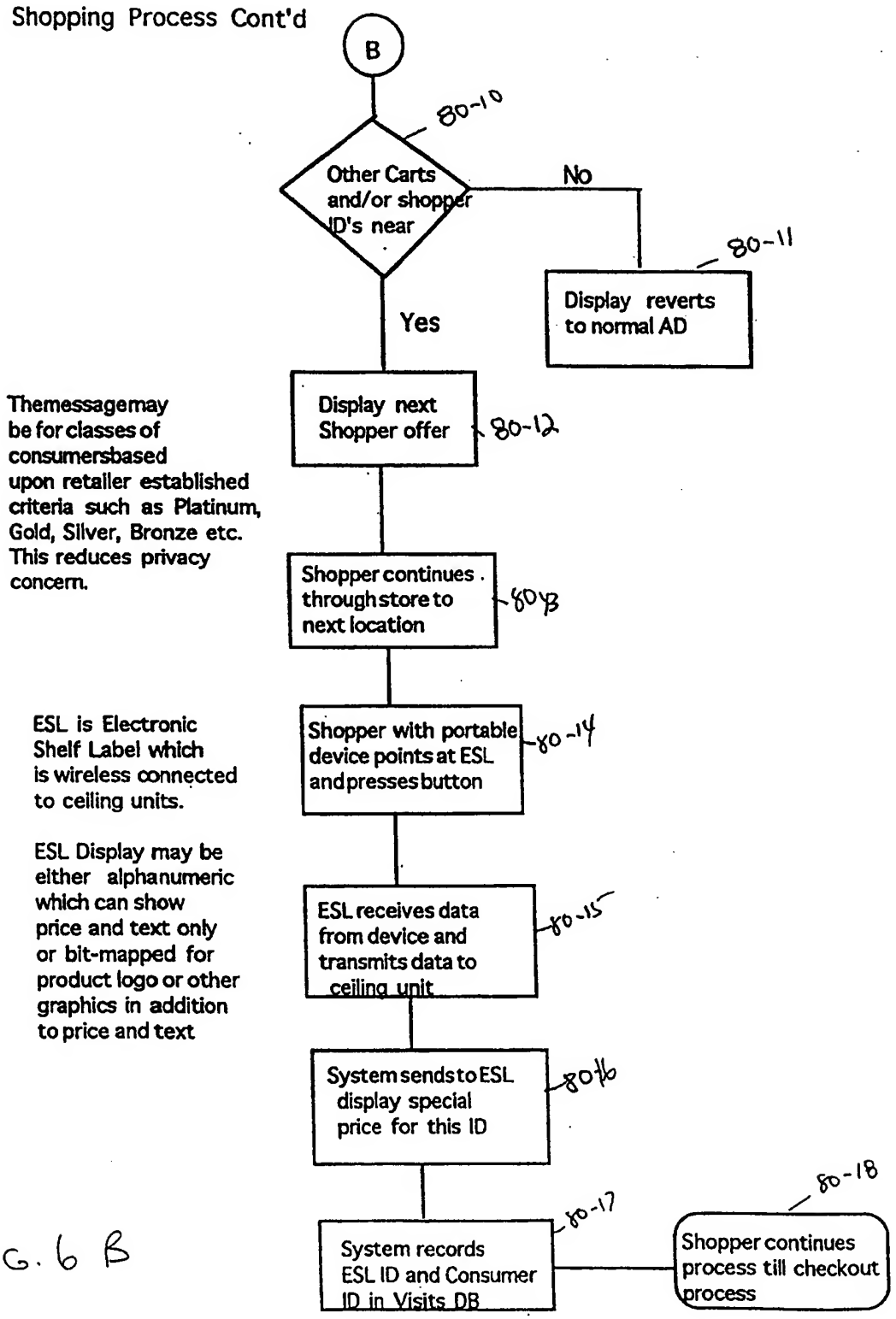

Shopping Process Cont'd
B
80-10
Other Carts and/or shopper ID's near
No
80-11
Display reverts to normal AD
Yes
Display next Shopper offer
80-12
Themessagemay be for classes of consumersbased upon retailer established criteria such as Platinum, Gold, Silver, Bronze etc. This reduces privacy concern.
Shopper continues through store to next location
80-13
ESL is Electronic Shelf Label which is wireless connected to ceiling units.
Shopper with portable device points at ESL and presses button
80-14
ESL Display may be either alphanumeric which can show price and text only or bit-mapped for product logo or other graphics in addition to price and text
ESL receives data from device and transmits data to ceiling unit
80-15
System sends to ESL display special price for this ID
80-16
System records ESL ID and Consumer ID in Visits DB
80-17
Shopper continues process till checkout process
80-18

FIG. 6 B

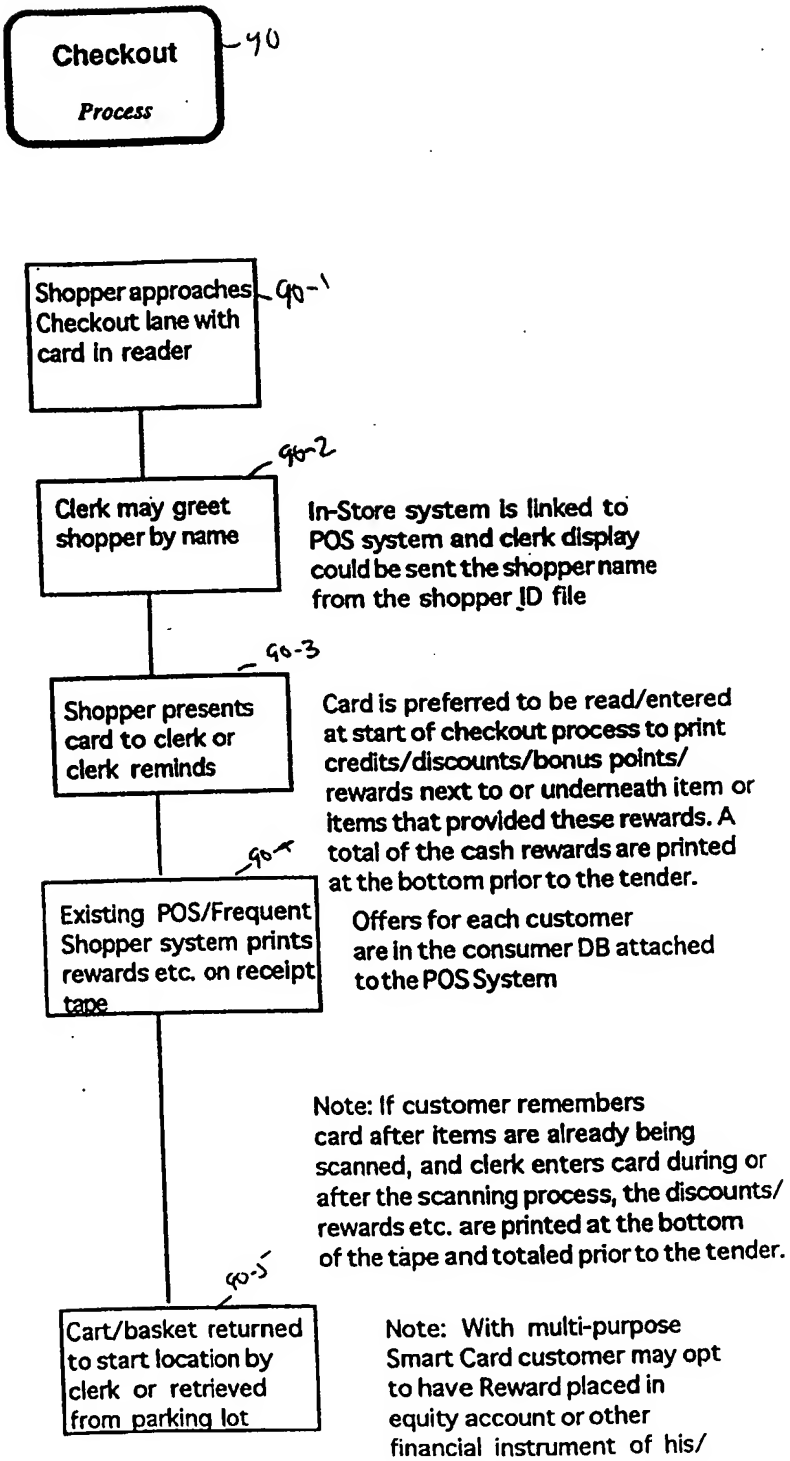

Checkout
Process
90
Shopper approaches Checkout lane with card in reader
90-1
Clerk may greet shopper by name
90-2
In-Store system is linked to POS system and clerk display could be sent the shopper name from the shopper ID file
Shopper presents card to clerk or clerk reminds
90-3
Card is preferred to be read/entered at start of checkout process to print credits/discounts/bonus points/ rewards next to or underneath item or items that provided these rewards. A total of the cash rewards are printed at the bottom prior to the tender.
Existing POS/Frequent Shopper system prints rewards etc. on receipt tape
90-4
Offers for each customer are in the consumer DB attached to the POS System
Note: If customer remembers card after items are already being scanned, and clerk enters card during or after the scanning process, the discounts/ rewards etc. are printed at the bottom of the tape and totaled prior to the tender.
Cart/basket returned to start location by clerk or retrieved from parking lot
90-5
Note: With multi-purpose Smart Card customer may opt to have Reward placed in equity account or other financial instrument of his/ her choice

FIG. 7

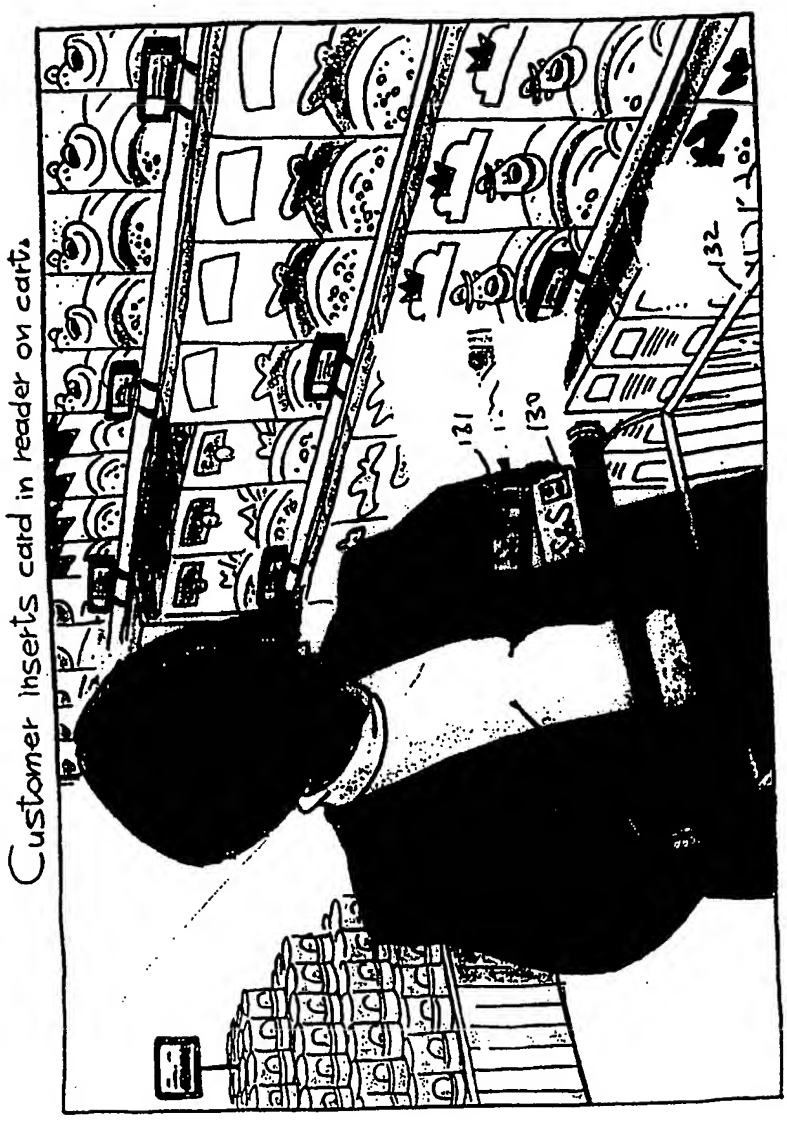


FIG.8

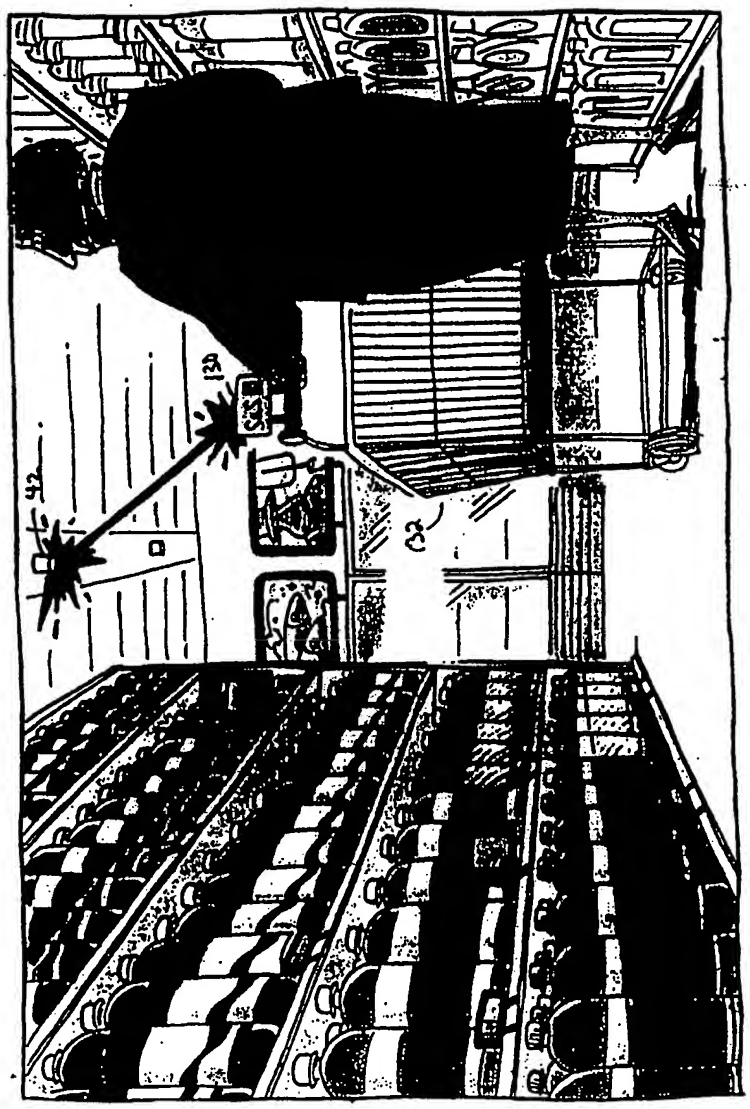


FIG. 9

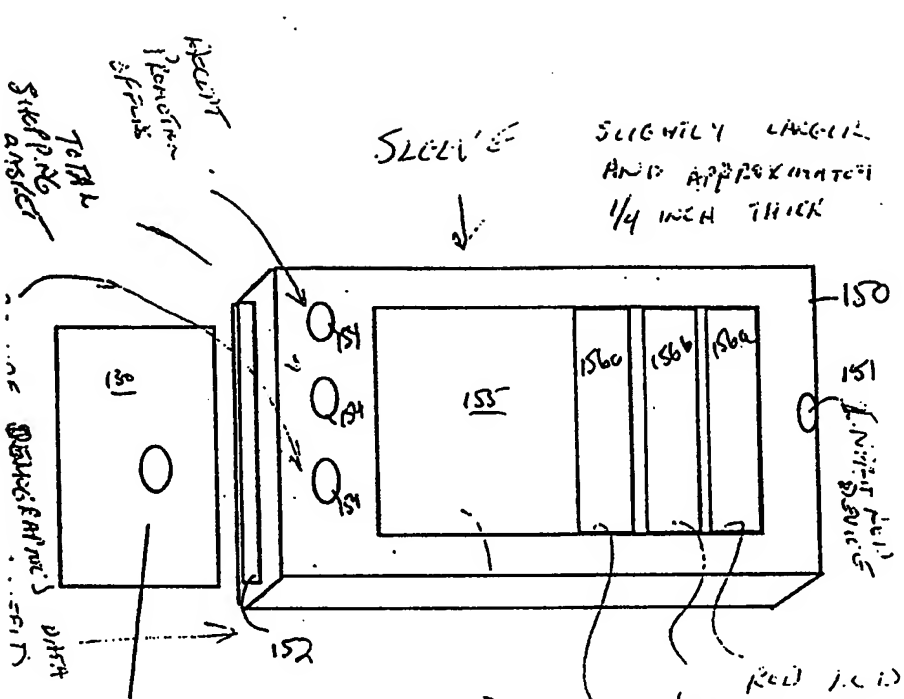


FIG. 10

ALL LED'S ARE PLACED

READING MECHANISM INSIDE IS COMBINATION CHIP + MAG STRIPE

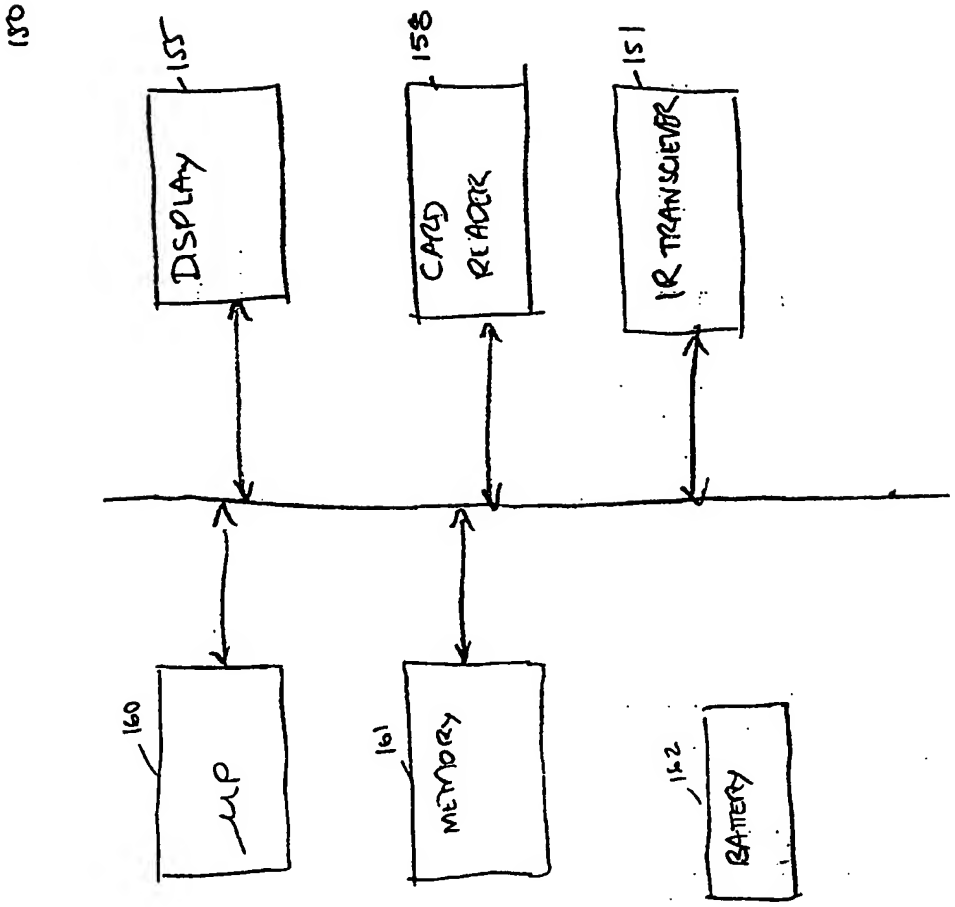

150
155
DISPLAY
158
CARD READER
151
IR TRANSCEIVER
160
μP
161
MEMORY
162
BATTERY

FIG. 11

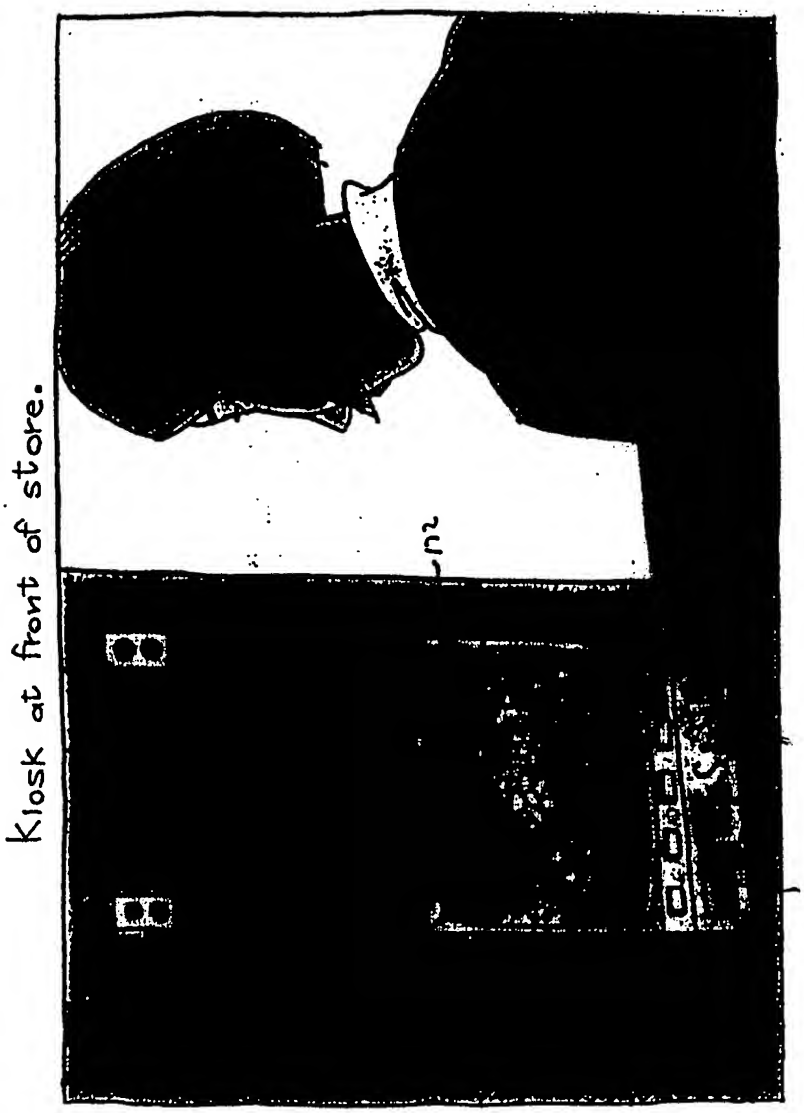


FIG. 12

FIG-13A

Stop ● & Shop ●

January 1997

Dear Ms. Smith: We at the Bedford Stop & Shop are pleased to offer you and your family these Right Rewards™ especially selected for you. When you use your Scan Saver card in January, you will receive these rewards automatically. If you need anything in our store, please ask for Stan your store manager.

PS - If your teenager needs a part time job, we are hiring baggers.

Save $1.00 on your next purchase of Havarti Cheese with Dill from our new Cheese Center!

Save $2.50 on your Lobster purchase from our Seafood Department.

On that lobster dinner save $.75 on the butter to go with it.

For that wonderful dessert try Häagen Dazs Chocolate Chocolate Chip at $1.00 off regular price.

Try Select Cola Free when you purchase an item from our Seafood Department.

Save $.25 per pound all this month on healthy MacIntosh Apples

Keep your children's lunches fresh. Scan Saver's saving you $1.00 on this item.

Tom's Strawberry Natural Toothpaste will keep those children's smiles white. $1.25 off!

Any Suave Shampoo will be a pleasant surprise to your purse with $2.00 in savings on your next purchase.

Tide Ultra 50 Oz. will be $3.00 off this month with your Scan Saver card.

Proprietary & Confidential to *InfraMEDIA Corporation

FIG. 13B

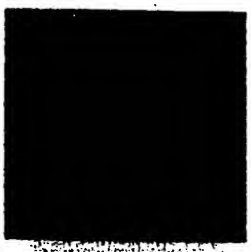
Stop & Shop

January 1997

Dear Mrs . Jones : We at the Bedford Stop & Shop are pleased to offer you and your family these Right Rewards ™ especially selected for you. When you use your Scan Saver card in January, you will receive these rewards automatically. If you need anything in our store, please ask for Stan your store manager.

PS If you drop by the Courtesy Booth and provide us your childrens names and ages we will provide them a surprise Birthday Gift.

Save $1.50 on your next purchase of Havarti Cheese with Chives from our new Cheese Center!



Save $2.50 on your Lobster purchase from our Seafood Department.

On that lobster dinner save $.50 on the light butter to go with it.

For that wonderful dessert try Häagen Dazs Chocolate Chocolate Chip at $1.00 off regular price.

Try our Select Caffeine Free Diet Cola Free with purchase of Lobster.

Save $.25 per pound all this month on healthy MacIntosh Apples

Keep your children's lunches fresh. Scan Saver's saving you $1.50 on this item.

Tom's Strawberry Natural Toothpaste will keep those children's smiles white. $1.25 off!

Yoplait Light will be a pleasant surprise to your purse with $.50 in savings on each of 5 Yoplait Light purchases.

Ultra Tide 50 Oz. will be $3.00 off this month with your Scan Saver card.

Proprietary & Confidential to *InfraMEDIA Corporation

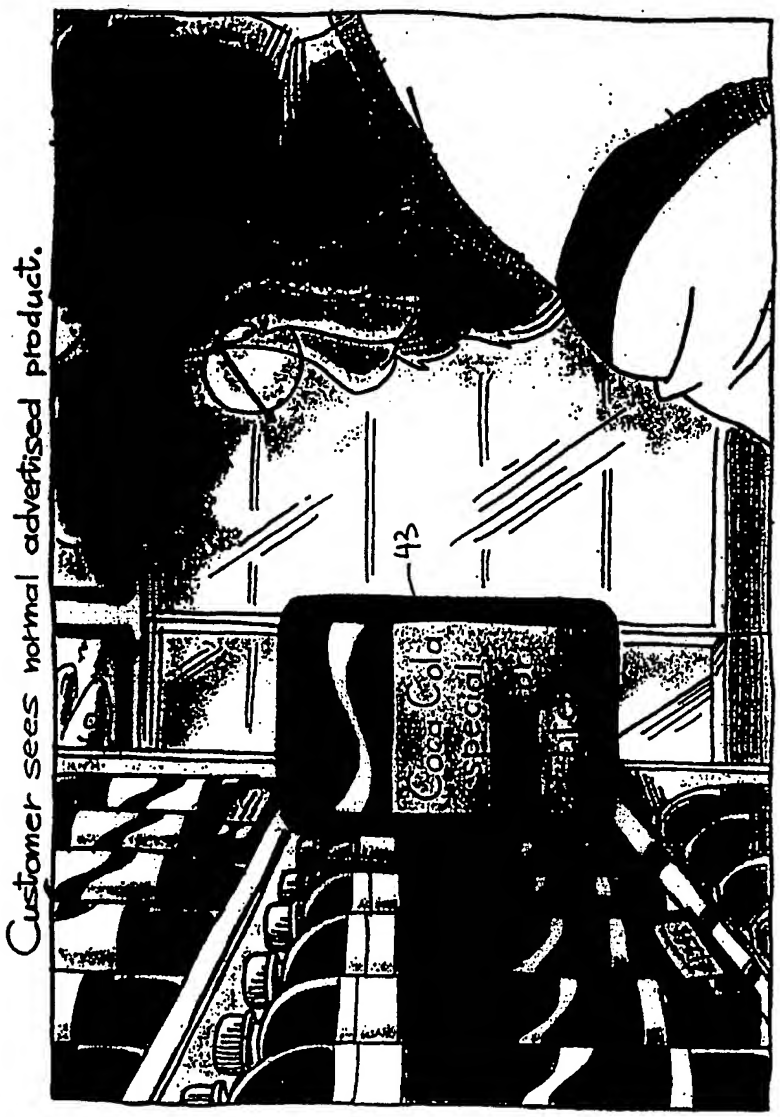

Customer sees normal advertised product.
43
Good Cold
Special

FIG. 14

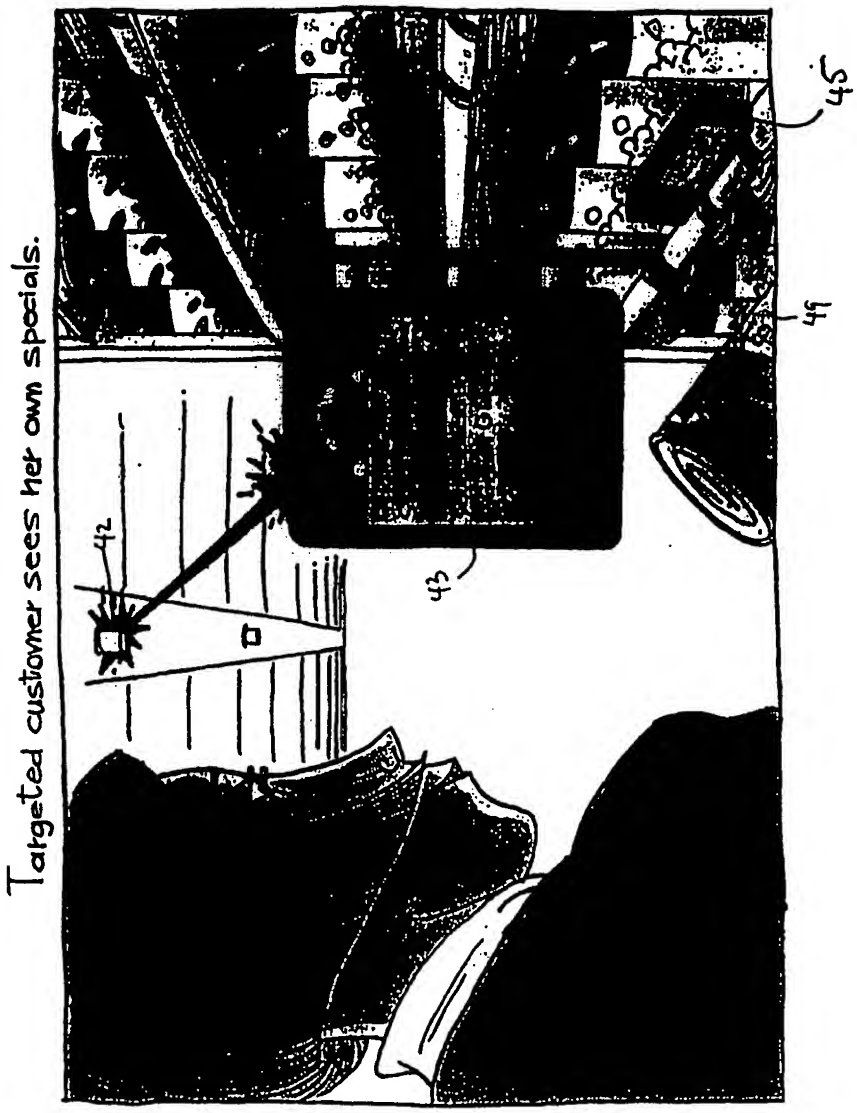


FIG. 15

INTERNATIONAL SEARCH REPORT

In tional Application No
PCT/US 98/03731

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/60

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 478 989 A (SHEPLEY KENNETH J) 26 December 1995 see the whole document ---	1-9,15, 24-27, 38,40-45
X	EP 0 697 670 A (AT & T CORP) 21 February 1996 see abstract see column 1, line 37 - column 2, line 11 see column 4, line 20 - column 4, line 32 see column 5, line 25 - column 6, line 39 see claims --- -/--	1,4,10, 11, 14-23, 28,31, 35-38, 40-45

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 June 1998	16/06/1998

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 98/03731

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category '	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	SCHMIDT E: "DER GLAESERNE VERBRAUCHER" ELEKTRONIK, vol. 40, no. 23, 12 November 1991, pages 42-45; XP000267143 see the whole document	1-3,6-9, 15,24, 25,28, 30-37
X	US 5 287 266 A (MALEC JOHN ET AL) 15 February 1994 see abstract see column 1, line 54 - column 2, line 44 see column 9, line 15 - column 9, line 26 see column 12, line 40 - column 12, line 56 see column 15, line 16 - column 15, line 30 see column 21, line 20 - column 22, line 5 see column 24, line 21 - column 24, line 44 see claims	1,2,4,6, 9-23, 28-38, 40-45
A	US 5 572 653 A (DETEMPLE WILLIAM C ET AL) 5 November 1996 see abstract see column 2, line 66 - column 3, line 55 see column 9, line 3 - column 10, line 21 see claims	28-37

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Int tional Application No
PCT/US 98/03731

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5478989 A	26-12-1995	NONE	
EP 0697670 A	21-02-1996	CA 2154603 A	20-02-1996
		CN 1123995 A	05-06-1996
		JP 8102700 A	16-04-1996
		SG 32458 A	13-08-1996
US 5287266 A	15-02-1994	US 4973952 A	27-11-1990
		US 5295064 A	15-03-1994
		AT 136378 T	15-04-1996
		AU 636809 B	06-05-1993
		AU 1098492 A	14-05-1992
		AU 635169 B	11-03-1993
		AU 1098592 A	07-05-1992
		AU 633457 B	28-01-1993
		AU 1098692 A	07-05-1992
		AU 616917 B	14-11-1991
		AU 2521588 A	17-04-1989
		CA 1300235 A	05-05-1992
		CA 1322577 A	28-09-1993
		CA 1330367 A	21-06-1994
		DE 3855178 D	09-05-1996
		DE 3855178 T	28-11-1996
		DK 246089 A	19-05-1989
		EP 0335931 A	11-10-1989
		FI 892436 A	19-05-1989
		JP 2501237 T	26-04-1990
		JP 2743340 B	22-04-1998
		WO 8902628 A	23-03-1989
US 5572653 A	05-11-1996	AU 7204094 A	01-08-1995
		CA 2187764 A	13-07-1995
		EP 0753175 A	15-01-1997
		WO 9519005 A	13-07-1995
		AU 5967890 A	18-12-1990
		WO 9014630 A	29-11-1990

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